

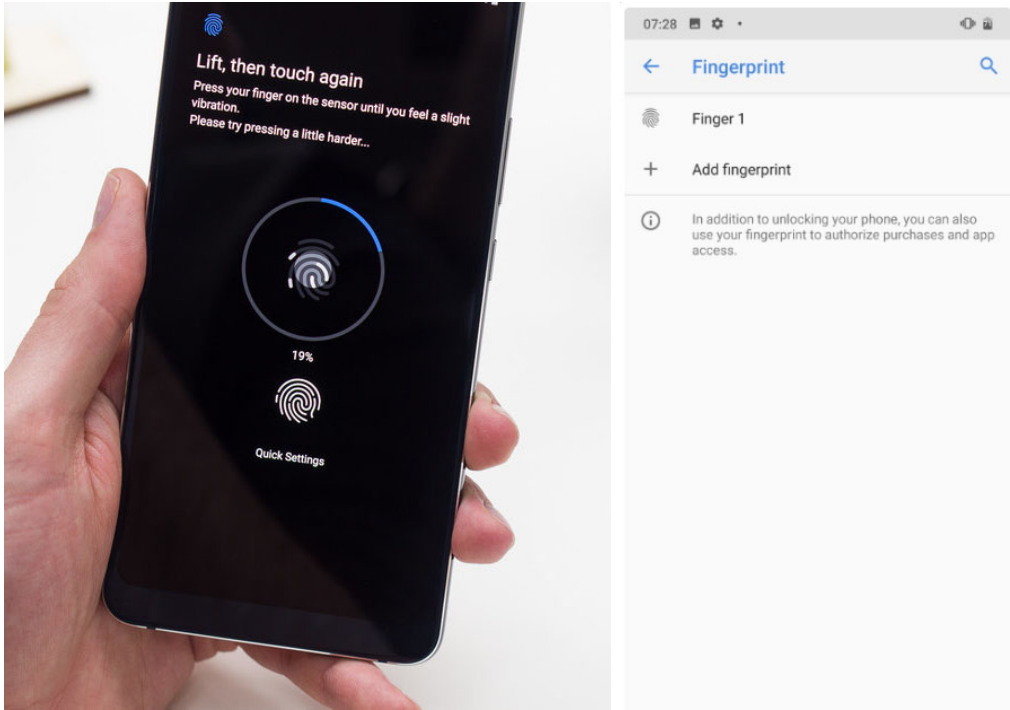
# EXHIBIT D

**Claim Chart for U.S. Patent No. 9,269,208 (“the ’208 Patent”)**

The Accused Instrumentalities include, but are not necessarily limited to, Nokia smartphones, including the Nokia 9 PureView and any Nokia product or device that is substantially or reasonably similar to the functionality set forth below. The Accused Instrumentalities infringe the claims of the ’208 Patent, as described below, either directly under 35 U.S.C. § 271(a), or indirectly under 35 U.S.C. §§ 271(b)–(c). The Accused Instrumentalities infringe the claims of the ’208 Patent literally and, to the extent not literally, under the doctrine of equivalents.

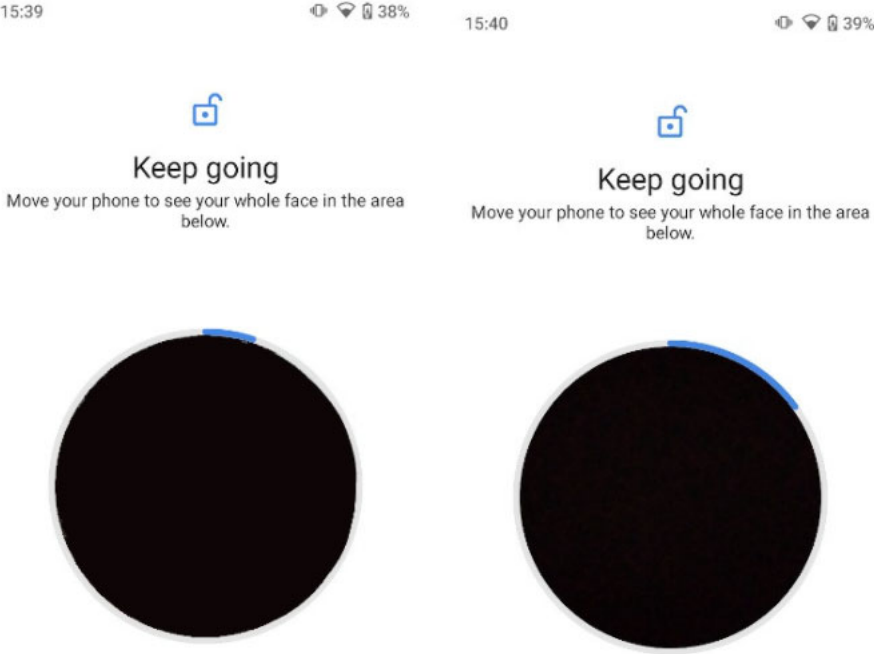
<b><u>Claim 10</u></b>	<b><u>Nokia 9 PureView</u></b>
<p>10. A method for providing secure access to a controlled item in a system comprising a database of biometric signatures, a transmitter sub-system comprising a biometric sensor for receiving a biometric signal, and means for emitting a secure access signal capable of granting more than two types of access to the controlled item, and a receiver sub-system comprising means for receiving the transmitted secure access signal, and means for providing conditional access to the controlled item dependent upon information in said secure</p>	<p>To the extent that the preamble is deemed to be a limitation, the Nokia 9 PureView is configured to use a system in accordance with this claim.</p> <p>Nokia 9 PureView utilizes Sensory’s TrulySecure Face Biometrics for face unlock feature. (<a href="https://findbiometrics.com/mwc-2019-sensory-face-biometrics-nokia-smartphones-503015/">https://findbiometrics.com/mwc-2019-sensory-face-biometrics-nokia-smartphones-503015/</a>)</p> <p>Sensory’s FIDO Certified authentication software ensures sensitive data – biometric profiles stored as “highly encrypted irreversible code” – never leave a user’s device, and thanks to its contactless nature, enables a convenient and secure user experience. (<a href="https://mobileidworld.com/mwc-nokia-smartphones-sensory-trulysecure-face-biometrics-802281/">https://mobileidworld.com/mwc-nokia-smartphones-sensory-trulysecure-face-biometrics-802281/</a>)</p>

<u><b>Claim 10</b></u>	<u><b>Nokia 9 PureView</b></u>
access signal, the method comprising the steps of:	
10a. populating the database of biometric signatures by: receiving a series of entries of the biometric signal;	<p><b>The Nokia 9 PureView populates the database of biometric signatures by receiving a series of entries of the biometric signal.</b></p> <p>More specifically, the Nokia 9 PureView utilizes Sensory's TrulySecure Face Biometrics that populate the database of encrypted fingerprints and face images used for biometric security based on a series of biometric signatures received by a sensor.</p> <p>Sensory's FIDO Certified authentication software ensures sensitive data – biometric profiles stored as “highly encrypted irreversible code” – never leave a user's device, and thanks to its contactless nature, enables a convenient and secure user experience. (<a href="https://mobileidworld.com/mwc-nokia-smartphones-sensory-trulysecure-face-biometrics-802281/">https://mobileidworld.com/mwc-nokia-smartphones-sensory-trulysecure-face-biometrics-802281/</a>)</p> <p>The Nokia 9 PureView receives a series of facial images by having users position their face in front of a frontal camera to set up face recognition.</p> <p>TrulySecure can also be used to reduce authentication data loads sent to cloud-based authentication systems by moving pre-authentication steps like liveness detection and feature extraction to the edge. TrulySecure's on-device liveness detection can be used to immediately verify user authentication samples for liveness before sending captured authentication images to the server for processing. Taking it another step further, by enabling TrulySecure's on-device feature extraction, once the AI detects liveness, it can then immediately convert the user's facial features into templates (irreversible mathematical data) that can be sent to the authentication server instead of sending multiple images. This mitigates security risks associated with sending photos of a user's face used for authentication over the internet, and significantly reduces the amount of data sent to the cloud for authentication. (<a href="https://www.prnewswire.com/news-releases/sensory-releases-trulysecure-face-authentication-with-3d-camera-support-gpu-processing-and-optional-cloud-capabilities-300736831.html">https://www.prnewswire.com/news-releases/sensory-releases-trulysecure-face-authentication-with-3d-camera-support-gpu-processing-and-optional-cloud-capabilities-300736831.html</a>)</p>

<u><b>Claim 10</b></u>	<u><b>Nokia 9 PureView</b></u>
	<p>The Nokia 9 PureView receives a series of fingerprint signal by having users to touch a screen repeatedly to set up a fingerprint unlocking. Additionally, The Nokia 9 PureView allows users to add multiple fingerprints.</p> <div data-bbox="583 443 1587 1149">  </div> <p>(<a href="https://www.hardreset.info/devices/nokia/nokia-9-pureview/add-fingerprint/">https://www.hardreset.info/devices/nokia/nokia-9-pureview/add-fingerprint/</a>)  (<a href="https://www.phonearena.com/news/Nokia-9-PureView-update-fixes-issues-with-the-in-display-fingerprint-scanner_id115459">https://www.phonearena.com/news/Nokia-9-PureView-update-fixes-issues-with-the-in-display-fingerprint-scanner_id115459</a>)</p>

<u><b>Claim 10</b></u>	<u><b>Nokia 9 PureView</b></u>
	<p>The Nokia 9 PureView receives a series of facial images by having users position their face in front of a frontal camera to set up face recognition.</p> <div data-bbox="604 337 1495 993"> </div> <p><a href="https://www.hardreset.info/devices/nokia/nokia-32/faq/faq/face-unlock-nokia/">https://www.hardreset.info/devices/nokia/nokia-32/faq/faq/face-unlock-nokia/</a></p>

<b><u>Claim 10</u></b>	<b><u>Nokia 9 PureView</u></b>
<p>10a1. determining at least one of the number of said entries and a duration of each said entry;</p>	<p><b>The Nokia 9 PureView populates the database of biometric signatures by determining at least one of the number of said entries and a duration of each said entry.</b></p> <p>More specifically, the Nokia 9 PureView generate the biometric database by determining at least one of the series of biometric signals received by biometric sensors.</p> <div data-bbox="583 480 1575 1182" data-label="Image"> </div> <p>(<a href="https://www.hardreset.info/devices/nokia/nokia-9-pureview/add-fingerprint/">https://www.hardreset.info/devices/nokia/nokia-9-pureview/add-fingerprint/</a>)  (<a href="https://www.phonearena.com/news/Nokia-9-PureView-update-fixes-issues-with-the-in-display-fingerprint-scanner_id115459">https://www.phonearena.com/news/Nokia-9-PureView-update-fixes-issues-with-the-in-display-fingerprint-scanner_id115459</a>)</p>

<u><b>Claim 10</b></u>	<u><b>Nokia 9 PureView</b></u>
	 <p>(<a href="https://www.hardreset.info/devices/nokia/nokia-32/faq/faq/face-unlock-nokia/">https://www.hardreset.info/devices/nokia/nokia-32/faq/faq/face-unlock-nokia/</a>)</p>
10a2. mapping said series into an instruction; and	<p><b>The Nokia 9 PureView populates the database of biometric signatures by mapping said series into an instruction.</b></p> <p>More specifically, upon information and belief, the Nokia 9 PureView includes a processor that can map a series of biometric signals into an instruction. The instruction is stored in the memory, and the processor communicates with the memory to map a series of biometric signals into an instruction.</p>

<u><b>Claim 10</b></u>	<u><b>Nokia 9 PureView</b></u>
	<p>TrulySecure can also be used to reduce authentication data loads sent to cloud-based authentication systems by moving pre-authentication steps like liveness detection and feature extraction to the edge. TrulySecure's on-device liveness detection can be used to immediately verify user authentication samples for liveness before sending captured authentication images to the server for processing. Taking it another step further, by enabling TrulySecure's on-device feature extraction, once the AI detects liveness, it can then immediately convert the user's facial features into templates (irreversible mathematical data) that can be sent to the authentication server instead of sending multiple images. This mitigates security risks associated with sending photos of a user's face used for authentication over the internet, and significantly reduces the amount of data sent to the cloud for authentication.</p> <p><b>CPU Utilization for Faster Authentication</b></p> <p>Another major update in TrulySecure is the ability to split the biometric authentication data processing load between a device's GPU and applications processor. To accomplish this, key processor-heavy components of the core TrulySecure algorithm were isolated, streamlined and specially ported to run on a GPU. In testing, it was found that those isolated components of TrulySecure run as fast or even faster on the GPU than on the AP. Moving heavy processing components of TrulySecure from the AP to the GPU allows the applications processor to either prioritize other tasks, or work in parallel with the GPU to cut the amount of processing time required for the TrulySecure algorithm in half.</p> <p>(<a href="https://www.prnewswire.com/news-releases/sensory-releases-trulysecure-face-authentication-with-3d-camera-support-gpu-processing-and-optional-cloud-capabilities-300736831.html">https://www.prnewswire.com/news-releases/sensory-releases-trulysecure-face-authentication-with-3d-camera-support-gpu-processing-and-optional-cloud-capabilities-300736831.html</a>)</p>
10a3.     populating the database according to the instruction;	<p><b>The Nokia 9 PureView populates the database of biometric signatures according to the instruction.</b></p> <p>More specifically, upon information and belief, the Nokia 9 PureView includes a processor that populates the database according to the instruction.</p>

<u><b>Claim 10</b></u>	<u><b>Nokia 9 PureView</b></u>
	<p><b>GPU Utilization for Faster Authentication</b></p> <p>Another major update in TrulySecure is the ability to split the biometric authentication data processing load between a device's GPU and applications processor. To accomplish this, key processor-heavy components of the core TrulySecure algorithm were isolated, streamlined and specially ported to run on a GPU. In testing, it was found that those isolated components of TrulySecure run as fast or even faster on the GPU than on the AP. Moving heavy processing components of TrulySecure from the AP to the GPU allows the applications processor to either prioritize other tasks, or work in parallel with the GPU to cut the amount of processing time required for the TrulySecure algorithm in half.</p> <p>(<a href="https://www.prnewswire.com/news-releases/sensory-releases-trulysecure-face-authentication-with-3d-camera-support-gpu-processing-and-optional-cloud-capabilities-300736831.html">https://www.prnewswire.com/news-releases/sensory-releases-trulysecure-face-authentication-with-3d-camera-support-gpu-processing-and-optional-cloud-capabilities-300736831.html</a>)</p>

<b><u>Claim 10</u></b>	<b><u>Nokia 9 PureView</u></b>
10b. receiving a biometric signal;	<p><b>The Nokia 9 PureView provides a secure access to a device by receiving a biometric signal.</b></p> <p>More specifically, the Nokia 9 PureView receives biometric signals through a sensor (in-display fingerprint sensor for fingerprint scanning and front camera for facial recognition) and processes the biometric data for biometric security.</p> <div data-bbox="583 480 1182 1183" data-label="Image"> </div> <div data-bbox="1192 561 1837 1183" data-label="Image"> </div> <p>(<a href="https://www.phonearena.com/news/Nokia-9-PureView-update-fixes-issues-with-the-in-display-fingerprint-scanner_id115459">https://www.phonearena.com/news/Nokia-9-PureView-update-fixes-issues-with-the-in-display-fingerprint-scanner_id115459</a>)  (<a href="https://www.youtube.com/watch?v=ugqFUibLUfo&amp;t=226s">https://www.youtube.com/watch?v=ugqFUibLUfo&amp;t=226s</a>)</p>
10c. matching the biometric signal against members of the database of	<p><b>The Nokia 9 PureView provides secure access to a device by matching the biometric signal against members of the database of biometric signatures to thereby output an accessibility attribute.</b></p>

<u><b>Claim 10</b></u>	<u><b>Nokia 9 PureView</b></u>
<p>biometric signatures to thereby output an accessibility attribute;</p>	<p>More specifically, the Nokia 9 PureView has a transmitter sub-system controller, which is a processor that determines a matching level by comparing the biometric signal received with the registered biometric database. Depending on the matching level, the device may remain locked or become unlocked.</p> <p>TrulySecure can also be used to reduce authentication data loads sent to cloud-based authentication systems by moving pre-authentication steps like liveness detection and feature extraction to the edge. TrulySecure's on-device liveness detection can be used to immediately verify user authentication samples for liveness before sending captured authentication images to the server for processing. Taking it another step further, <b>by enabling TrulySecure's on-device feature extraction, once the AI detects liveness, it can then immediately convert the user's facial features into templates (irreversible mathematical data) that can be sent to the authentication server instead of sending multiple images.</b> This mitigates security risks associated with sending photos of a user's face used for authentication over the internet, and significantly reduces the amount of data sent to the cloud for authentication.</p> <p><b>CPU Utilization for Faster Authentication</b></p> <p><b>Another major update in TrulySecure is the ability to split the biometric authentication data processing load between a device's GPU and applications processor.</b> To accomplish this, key processor-heavy components of the core TrulySecure algorithm were isolated, streamlined and specially ported to run on a GPU. In testing, it was found that those isolated components of TrulySecure run as fast or even faster on the GPU than on the AP. <b>Moving heavy processing components of TrulySecure from the AP to the GPU allows the applications processor to either prioritize other tasks</b>, or work in parallel with the GPU to cut the amount of processing time required for the TrulySecure algorithm in half.</p> <p>(<a href="https://www.prnewswire.com/news-releases/sensory-releases-trulysecure-face-authentication-with-3d-camera-support-gpu-processing-and-optional-cloud-capabilities-300736831.html">https://www.prnewswire.com/news-releases/sensory-releases-trulysecure-face-authentication-with-3d-camera-support-gpu-processing-and-optional-cloud-capabilities-300736831.html</a>)</p>
<p>10d. emitting a secure access signal conveying information dependent</p>	<p><b>The Nokia 9 PureView provides secure access to a device by emitting a secure access signal conveying information dependent upon said accessibility attribute</b></p>

<u><b>Claim 10</b></u>	<u><b>Nokia 9 PureView</b></u>
upon said accessibility attribute; and	<p>More specifically, the Nokia 9 PureView has a processor, which includes a transmitter blocks, that matches the received biometric signal against the biometric database by calculating a matching level and transmits the matching level results to the output device to determine whether the device should remain locked or become unlocked.</p> <p>TrulySecure can also be used to reduce authentication data loads sent to cloud-based authentication systems by moving pre-authentication steps like liveness detection and feature extraction to the edge. TrulySecure's on-device liveness detection can be used to immediately verify user authentication samples for liveness before sending captured authentication images to the server for processing. Taking it another step further, by enabling TrulySecure's on-device feature extraction, once the AI detects liveness, it can then immediately convert the user's facial features into templates (irreversible mathematical data) that can be sent to the authentication server instead of sending multiple images. This mitigates security risks associated with sending photos of a user's face used for authentication over the internet, and significantly reduces the amount of data sent to the cloud for authentication.</p> <p><b>CPU Utilization for Faster Authentication</b></p> <p>Another major update in TrulySecure is the ability to split the biometric authentication data processing load between a device's GPU and applications processor. To accomplish this, key processor-heavy components of the core TrulySecure algorithm were isolated, streamlined and specially ported to run on a GPU. In testing, it was found that those isolated components of TrulySecure run as fast or even faster on the GPU than on the AP. Moving heavy processing components of TrulySecure from the AP to the GPU allows the applications processor to either prioritize other tasks, or work in parallel with the GPU to cut the amount of processing time required for the TrulySecure algorithm in half.</p> <p>(<a href="https://www.prnewswire.com/news-releases/sensory-releases-trulysecure-face-authentication-with-3d-camera-support-gpu-processing-and-optional-cloud-capabilities-300736831.html">https://www.prnewswire.com/news-releases/sensory-releases-trulysecure-face-authentication-with-3d-camera-support-gpu-processing-and-optional-cloud-capabilities-300736831.html</a>)</p>
10e. providing conditional access to the controlled item dependent upon said	<b>The Nokia 9 PureView provides conditional access to the controlled item dependent upon said information, wherein the controlled item is one of: a locking mechanism of a physical access structure or an electronic lock on an electronic computing device.</b>

<u><b>Claim 10</b></u>	<u><b>Nokia 9 PureView</b></u>
<p>information, wherein the controlled item is one of: a locking mechanism of a physical access structure or an electronic lock on an electronic computing device.</p>	<p>More specifically, the Nokia 9 PureView includes an output device that can provide access to the device based on the secure access signal received from the processor.</p> <p>TrulySecure can also be used to reduce authentication data loads sent to cloud-based authentication systems by moving pre-authentication steps like liveness detection and feature extraction to the edge. TrulySecure's on-device liveness detection can be used to immediately verify user authentication samples for liveness before sending captured authentication images to the server for processing. Taking it another step further, by enabling TrulySecure's on-device feature extraction, once the AI detects liveness, it can then immediately convert the user's facial features into templates (irreversible mathematical data) that can be sent to the authentication server instead of sending multiple images. This mitigates security risks associated with sending photos of a user's face used for authentication over the internet, and significantly reduces the amount of data sent to the cloud for authentication.</p> <p><b>CPU Utilization for Faster Authentication</b></p> <p>Another major update in TrulySecure is the ability to split the biometric authentication data processing load between a device's GPU and applications processor. To accomplish this, key processor-heavy components of the core TrulySecure algorithm were isolated, streamlined and specially ported to run on a GPU. In testing, it was found that those isolated components of TrulySecure run as fast or even faster on the GPU than on the AP. Moving heavy processing components of TrulySecure from the AP to the GPU allows the applications processor to either prioritize other tasks, or work in parallel with the GPU to cut the amount of processing time required for the TrulySecure algorithm in half.</p> <p>(<a href="https://www.prnewswire.com/news-releases/sensory-releases-trulysecure-face-authentication-with-3d-camera-support-gpu-processing-and-optional-cloud-capabilities-300736831.html">https://www.prnewswire.com/news-releases/sensory-releases-trulysecure-face-authentication-with-3d-camera-support-gpu-processing-and-optional-cloud-capabilities-300736831.html</a>)</p>